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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,502	01/25/2002	Leon Chia-Liang Lin	01 P 15968 US (INFI 2322)	4351
29393	7590	05/31/2006		
ESCHWEILER & ASSOCIATES, LLC NATIONAL CITY BANK BUILDING 629 EUCLID AVE., SUITE 1210 CLEVELAND, OH 44114			EXAMINER WONG, LINDA	
			ART UNIT 2611	PAPER NUMBER

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/057,502

Applicant(s)

LIN ET AL.

Examiner

Linda Wong

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 19-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-12, 24-26 and 28-30 is/are allowed.
- 6) ☒ Claim(s) 1-2, 5, 9, 19, 20, 23, 27, 31 is/are rejected.
- 7) ☒ Claim(s) 3, 4, 6-8, 13, 14, 21, 22, 32 and 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments, see Applicant's Remarks, filed 3/15/2006, with respect to the rejection(s) of claim(s) 1-5 under the admitted prior art in view of Hart et al (US Patent No.: 6577196) and further in view of Wu et al (US Patent No.: 6870891) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of the admitted prior art in view of Heinonen et al (US Publication No.: 20030194029).

### ***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1 and 2** are rejected under 35 U.S.C. 102(e) anticipated by Heinonen et al (US Publication No.: 20030194029).
  - a. **Claim 1**, Heinonen et al discloses an amplifier (Fig. 3, label 302), a digitizing means (Fig. 3, label 306) and a first automatic gain control (AGC) (Fig. 3, labels 308,310,312,324,322,314,316) for determining the number of signal levels within a predetermined period of time or first range (paragraph [0038], lines 1-2) and increasing or decreasing the gain of the amplifier when the number of signals levels within a predetermined period of time is greater, less than,

respectively, a maximum threshold. (paragraph [0038] and Fig. 6) Although Heinonen et al fails to literally teach amplifying and digitizing pulse amplitude modulated signals (PAM), Heinonen et al inherently incorporates amplifying and digitizing PAM signals by providing amplifying RF OFDM signals and outputting from the ADC 16-QAM OFDM time samples. ([0022], line 18-21, [0031] and Fig. 3)

**Examiner's Note:** To further explain the inherency as stated above, Heinonen et al discloses the RF OFDM signals are modulated using 16 QAM, wherein a 16-QAM modulation is "achieved by modulating two 4-level PAM signals onto orthogonal carriers". ("Quadrature Amplitude Modulation, page 2) Please review the incorporated reference "Quadrature Amplitude Modulation" for further information on the relationship between QAM and PAM. (specifically, page 4) Please also note that the reference "Quadrature Amplitude Modulation" is **NOT** incorporated as a reference for the rejection, but incorporated as further information regarding the inherency of QAM incorporating PAM signals.

- b. **Claim 2**, Heinonen et al discloses a first means for determining the values of the time sample within a predetermined period of time or a first range ([0037], lines 3-10 and Fig. 6, labels 602 and 604), and a second means for adjusting the first gain by determining if the "signal level over the predetermined period of time is greater than a predefined maximum threshold at step 606". (Fig. 6, labels 604,606,610,608,612,614, [0038]) Although Heinonen et al does not literally state N data elements, Heinonen et al discloses a plurality of time

samples, which indicates N number data elements or N number of samples or N number of time samples, wherein N is greater than 1.

3. **Claims 5,9,27,31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen et al (US Publication No.: 20030194029) in view of the admitted prior art (Fig. 1-2).
- a. **Claim 5**, the admitted prior art discloses a digital signal processing (DSP) (Fig. 2, labels 38, 42,44,45), a slicer (Fig. 2, label 46), and a second AGC means (Fig. 2, label 56). **Motivation:** It would be obvious to one skilled in the art to incorporate the admitted prior art into Heinonen et al to extract and determine the wanted data from the transmitted signal by eliminating interference caused by the channel. (Fig. 1 and 2 and [0004])
- b. **Claim 9** inherits all the limitations of claims 1,2,5, but claims 1,2,5 fails to recite the limitation "second means for adjusting the first gain that increases the first gain when the value of the counter data is less than a low threshold value and decreases the first gain when the value of the counter data is greater than a high threshold value, the low threshold and high threshold value defining a second range". Heninon et al discloses such a limitation in Fig. 6.
- c. **Claim 27** inherits all the limitations of claims 1,2,9, but claims 1,2,9 fails to recite the limitations "processing the second data elements to produce a sequence of third data elements", "processing the third data elements" and "controlling the second gain". The admitted prior art discloses in Fig. 2

"processing the second data elements to produce a sequence of third data elements (Fig. 2, labels D2, D3, 42,44,38,40,44,45), each having a real number value that is substantially proportional to a product of the integer value of a corresponding one of the first data elements and a second gain" (Fig. 2, labels G1,32,54,G2 and 44), "processing the third data elements (Fig. 2, label 56,46) to produce a sequence of fourth data elements (Fig. 2, label D4), wherein each fourth data element has an integer value approximating a value of a corresponding one of the third data elements (Fig. 2, labels D3,D4 and 46)" and "controlling the second gain in response to a comparison of values of corresponding third and fourth data elements" (Fig. 2, label 56 and [0012])

d. **Claim 31** inherits all the limitations of claim 2.

4. **Claims 19,20,23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Heinonen et al (US Publication No.: 20030194029) in view of Wu et al (US Patent No.: 6870891).

a. **Claim 19**, Heinonen et al discloses an amplifier (Fig. 3, label 302), a digitizing means (Fig. 3, label 306) and a first automatic gain control (AGC) (Fig. 3, labels 308,310,312,324,322,314,316) for determining the number of signal levels within a predetermined period of time or first range (paragraph [0038], lines 1-2) and increasing or decreasing the gain of the amplifier when the number of signals levels within a predetermined period of time is greater, less than, respectively, a maximum, minimum threshold. (paragraph [0038] and Fig. 6)

Although Heinonen et al fails to teach “determine a number of second data elements generated per unit time having values greater than a target value that defines a first range”, Wu et al discloses comparing the magnitude of the samples with a lower threshold or first target or first range. (Fig. 2, label 31 and Col. 2, lines 35-57) **Motivation:** It would be obvious to one skilled in the art to incorporate such a comparison as disclosed by Wu et al into Heinonen et al’s invention to reduce the time required for gain control to occur. (Col. 1, lines 21-25)

- b. **Claim 20** inherits all the limitations of claim 2.
- c. **Claim 23**, Although Heinonen et al and Wu et al fails to disclose the limitations as recited in claim 23, the admitted prior art discloses in Fig. 2 “processing the second data elements to produce a sequence of third data elements (Fig. 2, labels D2, D3, 42,44,38,40,44,45), each having a real number value that is substantially proportional to a product of the integer value of a corresponding one of the first data elements and a second gain” (Fig. 2, labels G1,32,54,G2 and 44), “processing the third data elements (Fig. 2, label 56,46) to produce a sequence of fourth data elements (Fig. 2, label D4), wherein each fourth data element has an integer value approximating a value of a corresponding one of the third data elements (Fig. 2, labels D3,D4 and 46)” and “controlling the second gain in response to a comparison of values of corresponding third and fourth data elements” (Fig. 2, label 56 and [0012]) **Motivation:** It would be obvious to one skilled in the art to incorporate the admitted prior art into

Heinonen et al to extract and determine the wanted data from the transmitted signal by eliminating interference caused by the channel. (Fig. 1 and 2 and [0004])

***Allowable Subject Matter***

5. **Claims 3,4,6-8,13-14,21-22,32-33** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. **Claims 10-12,24-26,28-30** are allowed over prior art.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Linda Wong whose telephone number is 571-272-6044. The examiner can normally be reached on 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Linda Wong

A handwritten signature in black ink, appearing to read 'Linda Wong', with a long horizontal flourish extending to the right.

**DACHA**  
**PRIMARY EXAMINER**